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IMPACT, a Coupled Tropospheric/Stratospheric Chemistry Model: Analysis and Comparison of Results to Observations

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DISCLAIMER

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IMPACT, a coupled tropospheric/stratospheric chemistry model:
Analysis and comparison of results to observations

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We have conducted multi-year simulations describing the distributions of important chemical species in both the troposphere and stratosphere using the LLNL IMPACT atmospheric chemistry model. Simulations have been completed using input meteorological data from both a general circulation model (NCAR MACCM3, Middle Atmospheric Community Climate Model Version 3) and analyzed fields (NASA Data Assimilation Office, STRATF product). IMPACT includes modules describing tropospheric and stratospheric processes and emissions to determine species distributions from the surface to approximately 70 kilometers in altitude. We compare results of these simulations with both long term and short term observational data including surface measurements, vertical profiles and others. We contrast the model's ability to simulate important photochemical cycles (CO/CH4/NMHC/NOx/OH/O3, etc) using both input meteorological datasets. In addition, IMPACT simulations driven with analyzed data are compared to ground based and aircraft campaigns.

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